

Connecting Puerto Rico

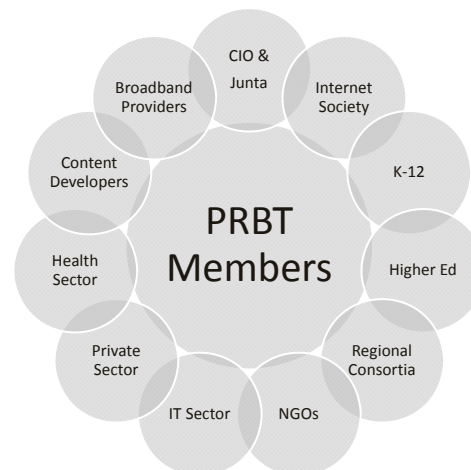
A Puerto Rico Broadband Taskforce Briefing

June 5th, 2012

Puerto Rico Broadband Taskforce

- PPP working to develop policy recommendations to close the digital divide
- Created in 2011 by the Office of the CIO, the Junta Reglamentadora de Telecomunicaciones President, and the Internet Society of Puerto Rico
- Composed of 12 members representing a broad spectrum of stakeholders

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A Holistic Approach That Tackles Supply and Demand Challenges

- 25 Strategic Goals
- 40 Policy Recommendations

Access

- Serve the Unserved
- Increase Speed Capacity – Network of networks to meet demand of citizens & Community Anchor Institutions
- Stimulate Competition and Market Entry

Adoption

- Home and Mobile Broadband
- Public Computing Centers and IT-Literacy Training
- Vulnerable Communities

Utilization

- Education
- eHealth
- eGovernment
- Public Safety

The Puerto Rico Broadband Strategic Plan

- **Overcoming the Access Gap**
- **Closing the Adoption Gap**
- **Promoting Usage Across Key Sectors**
 - Education
 - eHealth

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Overcoming the Access Gap

Ensuring subsequent waves of investment in infrastructure deployment to meet the increasing demand for broadband capacity by all citizens, businesses, government, and community anchor institutions

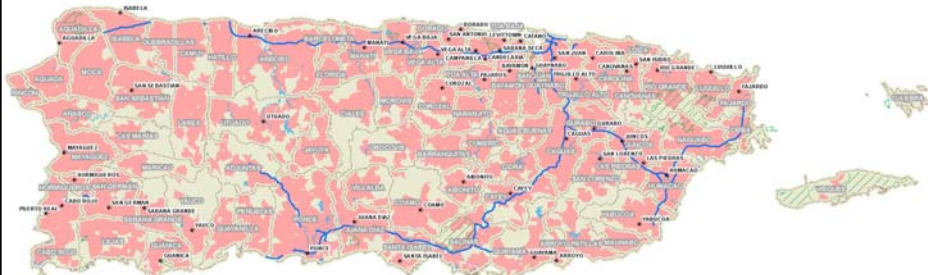


Puerto Rico Broadband Inventory

ACCESS

An estimated 86% of households have broadband available
14%, or approximately 177,000 households, do not

Broadband Inventory of Advertised Service of at least
768 Kbps Download/200 Kbps Upload Speeds



Connect Puerto Rico broadband map
<http://www.connectpr.org/interactive-map>

- Symbology**
- City
 - Primary Road
 - Municipality Boundary
 - Water
 - National Lands
 - Terrestrial, Non-Mobile Broadband Service
 - Unserved Areas

Puerto Rico Broadband Gap – 3 Mbps+

ACCESS

Across Puerto Rico, high-speed capacity is severely lagging
Only 57% of residents have access to broadband at 3 Mbps

Broadband Inventory of Advertised Service of at least
3 Mbps Download/768 Kbps Upload Speeds



Puerto Rico Broadband Inventory by Speed Tier

ACCESS

The infrastructure is markedly insufficient to sustain the growing demand of businesses, citizens, schools, hospitals, or government.

Download/Upload Speed Tiers	Number of Unserved Households	Percent Households Served
At Least 768 Kbps/200 Kbps	177,000	86%
At Least 1.5 Mbps/200 Kbps	187,000	85%
At Least 3 Mbps/768 Kbps	544,000	57%
At Least 6 Mbps/768 Kbps	742,000	41%
At Least 6 Mbps/1.5 Mbps	834,000	34%
At Least 10 Mbps/768 Kbps	860,000	32%
At Least 25 Mbps/768 Kbps	1,261,000	0.00%
At Least 50 Mbps/768 Kbps	1,261,000	0.00%
At Least 100 Mbps/768 Kbps	1,261,000	0.00%
At Least 1 Gbps/768 Kbps	1,261,000	0.00%

Puerto Rico Broadband Access Goals

ACCESS

Fixed Broadband

- By 2015, 98% of all households served at actual minimum speeds of 4 Mbps DL/1 Mbps UL
- By 2020, 85% of all locations served at speeds of 100Mbps DL/50Mbps UL

Mobile Broadband

- By 2015, 98% of the island's geography where the population resides served
- Aggressive expansion of smart phone penetration and tablet end-user devices

Community Anchor Institutions

- By 2015, universal access at 100 Mbps DL/25 Mbps UL speeds
- By 2020, universal access at 1 Gbps speeds

Competition

- By 2015, 98% of Puerto Ricans will have at least three competitive broadband offerings available

Puerto Rico Investment Gap

ACCESS

- Key economic factors behind investment lag
 - Lagging Demand:
 - With expected demand less than half the U.S. average, expected revenue flow from investment are markedly lower than across other jurisdictions
 - High Capital Investment Costs
 - Permits
 - Pole attachment costs
 - Planning and coordination with island & local authorities
 - High Operations Costs
 - High and volatile energy costs
 - High cost of backhaul traffic
 - High rates of theft and fraud
 - Competition

Strategies to Promote Network Investment

ACCESS

- Aggressively stimulate lagging demand, improving the business case for broadband deployment
 - Expand residential and business demand for ICT technology
 - Expand broadband applications and usage across K-12, Higher-Ed, Government
- Lower barriers to entry and costs to deployment
 - Encourage more effective local planning processes
 - Continue streamlining permitting process for construction projects
 - Colocation and pole attachment process and rates
 - Reduce crime theft and improve law enforcement efforts
- Streamline the regulatory process & continue promoting fair competition and market entry
- Work collaborative with Federal agencies: Dep. Commerce, Dep. Agriculture, FCC.

Closing the Adoption Gap

Ensuring universal adoption and penetration of broadband services
– either mobile or fixed – by all citizens and businesses

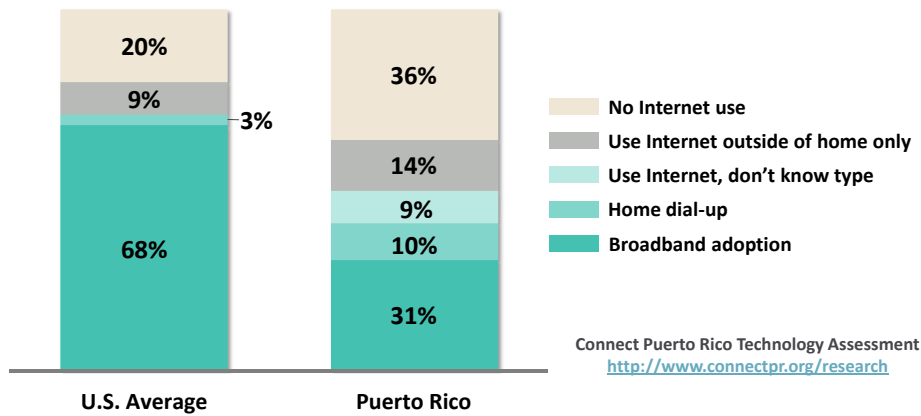


Puerto Rico Broadband Adoption Gap

ADOPTION

Broadband adoption in Puerto Rico is significantly lower than the U.S. average

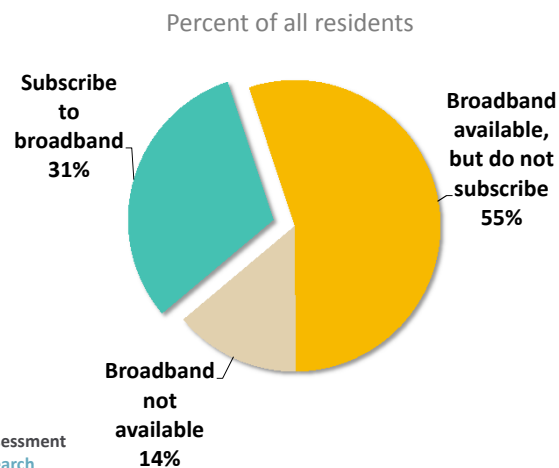
Percent of all residents



Puerto Rico Broadband Adoption Gap

ADOPTION

- While 86% of households have access to broadband, only 31% have adopted broadband.
- That leaves 55% of households in Puerto Rico that have access to broadband and are not adopting it.

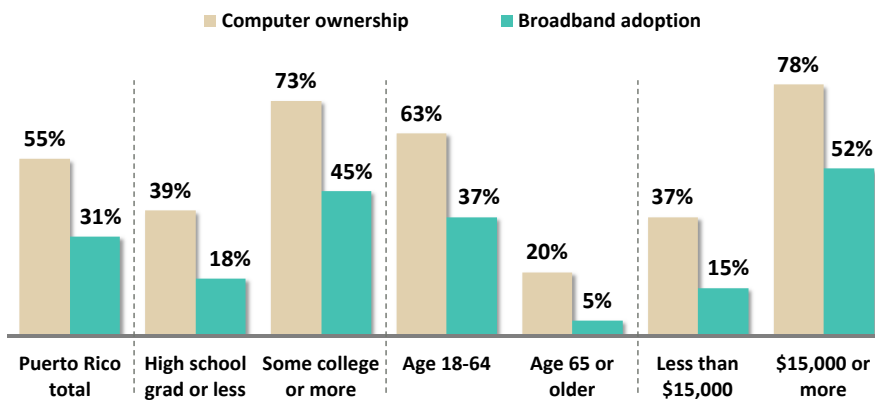


Puerto Rico Demographic Drivers

ADOPTION

The key drivers of technology adoption are education attainment, age, and income

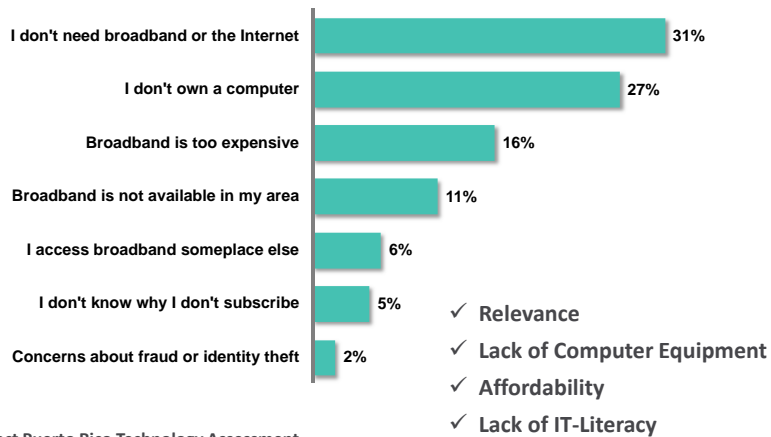
Percent of all residents



Puerto Rico Barriers to Broadband Adoption

ADOPTION

Percent of Puerto Rico residents with no home broadband service



Connect Puerto Rico Technology Assessment
<http://www.connectpr.org/research>

Puerto Rico Broadband Adoption Goals

ADOPTION

All Puerto Ricans, regardless of income, race, gender, age or location, should have access and the willingness to partake and benefit from the online opportunities available through broadband

To enable this vision:

- By 2013, home broadband adoption should be at least 50% and by 2015 at least 70%
- By 2015, adoption of broadband by all businesses with more than 4 employees
- By 2015, 90% of the Puerto Rico population should have access to a broadband enabled computer or mobile device, either at home, work, or via personal connection

Puerto Rico Recommendations

ADOPTION

- Expand or create public computing centers and free WiFi hotspots
- Expand digital literacy and learning programs
- Promote broadband adoption amongst low income populations
- Leverage extensive PPP online digital learning curricula
- Promote mobile broadband usage amongst disconnected
- Build awareness campaigns showcasing the benefits of broadband
- Accelerate ICT access and use across K-12
- Promote teleworking across private and public sectors
- Leverage the presence and value of eGovernment services
- Leverage federal programs aimed at closing the digital divide: FCC lifeline pilots, Connect2Compete.

Promoting Utilization Across Key Sectors: Education and eHealth

Ensuring that all communities – particularly community anchor institutions such as schools, hospitals, and clinics – are increasingly using broadband technology to pursue economic opportunity and sustainability, improve government services, and leverage educational and eHealth resources.



Education

UTILIZATION

Goal: All K-16 institutions will have sufficient broadband capacity available to sustain always-on learning opportunities in every school, teachers' and administrators office, classroom, and on each student's decks and backpack.

- Every K-16 institutions should have access to **100 Mbps by 2015** and **1 Gbps by 2020**
- All students will have the means to access always-on online learning opportunities in an outside of the classroom
- Develop technology curriculum for every stage of the K-16 learning experience

• Challenges

- Insufficient Capacity to Support K-12 System
 - The maximum broadband speeds available across K-12 public schools was 1.5 Mbps in 2011
 - The Government of Puerto Rico's 21st Century School Initiative - \$756MM to upgrade facilities connectivity across 100 pilot schools
- Insufficient computer or device equipment in the classroom and across the student population
- Insufficient resources to train teachers how to fully leverage online resources

Education

UTILIZATION

- **Strategic Recommendations:**
 - Promote PPP collaborative efforts
 - Leverage the demand for broadband across education institutions to promote competition and investment in broadband service
 - Establish inter-agency and PPP task force to develop staged plans to achieve a computer-per-teacher and device-per-pupil goal - Pilots
 - Continue integrating the use of technology into the curriculum and instruction of the K-12 system, with particular emphasis given to STEM, bilingual programs
 - Expand resources to train teachers to ensure that they are able to fully leverage ICT solutions in the classroom
 - Launch pilot programs to assess the efficacy of online education modules.
 - Ensure K-16 institutions have appropriate legal and procedural frameworks to perform effective network management
 - Collaborate with Federal agencies to ensure compliance with federal standards and leverage federal opportunities – Dep. Education, FCC.

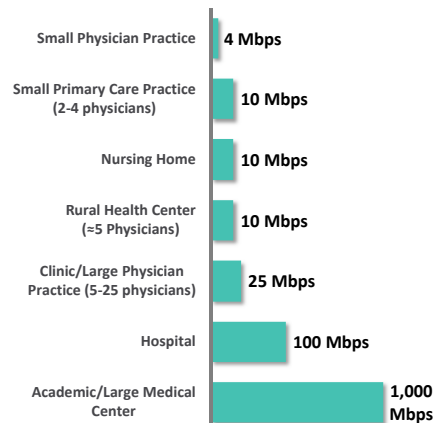
eHealth

UTILIZATION

Puerto Rico's residential and Healthcare sectors lacks adequate infrastructure to properly utilize Health IT services and applications

- 85% of the businesses in Puerto Rico's Healthcare sector subscribe to broadband
- The average speeds available to healthcare providers is 2.6 Mbps, which is insufficient to sustain most Health IT solutions, including telemedicine
- Telemedicine and other Health IT initiatives will necessitate drastically increased bandwidth capacity, more storage and processing capabilities, and higher levels of security to protect patient information.

PRBT Broadband Capacity Goals for Healthcare Institutions



**The Puerto Rico Broadband
Taskforce**

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